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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,931	12/14/2004	Christoph G. Leussler	PHDE020152US	6879

38107 7590 01/04/2006

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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CLEVELAND, OH 44143

EXAMINER	
FETZNER, TIFFANY A	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/517,931	LEUSSLER ET AL.	
	Examiner	Art Unit	
	Tiffany A. Fetzner	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED Final ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Response to Arguments

2. Applicant's arguments filed October 17th 2005 have been fully considered but they are not persuasive.

3. Applicant argues in the October 17th 2005 amendment and response, on page 9 in the last sentence that the features claimed by applicant and lacked by the **Lee** reference are "an RF coil system for transmitting and/or receiving RF signals with two planar RF coil arrays which are situated on opposite sides of the examination zone as se t forth in claim 1. Rather, Lee shows that the PSA antenna is situated on a single side of the examination zone." This argument is not persuasive because component 526 is a plurality (i.e. a multiple, at least two of more) of RF coils which transmit RF signals, are located on one side of an examination zone below the patient to be imaged, and are shown as a planar coil arrangement in figure 11. Because component 526 is shown to be planar in figure 11 and taught to comprise a plurality (i.e. a multiple, at least two of more) of RF coils, coils 526 are intrinsically a planar RF transmission coil array. [See figure 11 and paragraph [0101]] Additionally component 100 is an RF planar strip array antenna or RF (PSA) antenna, which is located on the opposite side of the examination zone, opposite to the RF transmission coil array 526, above the patient being imaged. [See figure 11.]

4. The examiner notes that the RF PSA antenna 100 is capable of transmitting and/or receiving RF signals, therefore contrary to applicant's argument **Lee** does teach, and show "an RF coil system for transmitting and/or receiving RF signals with two planar RF coil arrays (i.e. components 526 and 100 of figure 11) which are situated on opposite sides of the examination zone [See figure 11, where the components 526 and 100 are shown on opposite sides of the examination zone.] as se t forth in claim 1. The examiner considers applicant's statement that "Rather, Lee shows that the PSA antenna is situated on a single side of the examination zone" to be irrelevant because

the second RF coil array is the planar plurality of RF transmitting coils 526, which are shown to be of a planar structure, on the opposite side of the examination zone as the planar RF coil strip array 100 in figure 11.

5. The applicant also argues on page 10 of the October 17th 2005 amendment and response, that the "Office Action has not established any teaching in Lee that the transmitter coils are array as set forth in claim 1." However, as noted above, **Lee** teaches a plurality (i.e. a multiple, at least two of more) of RF coils comprising component 526. [See paragraph [0101]. Because component 526 is shown to be planar in figure 11 and taught to comprise a plurality (i.e. a multiple, at least two of more) of RF coils, coils 526 are intrinsically a planar RF transmission coil array. [See figure 11 and paragraph [0101]], therefore applicant's argument that this feature is not established as a teaching of **Lee** is not persuasive, since it is the combination of the written teachings as well as the illustration of the component 526, which provides support for this limitation from **Lee**.

6. The rejection of claim 1 has been amended to reflect the citations noted within the arguments herein with respect to the features above, as a means of providing a further clarification as to how the applied prior art of **Lee** meets the claims of the applicant, as requested by applicant in the October 17th 2005 amendment and response. Because the art being applied against the claims has not changed, and applicant's arguments have been addressed, and clarified as requested. This office action is **final**.

7. If applicant wishes any further clarification of the remaining issues applicant may request a telephonic interview with the examiner, however the claims as currently provided by applicant are met by the art noted below. The examiner notes that the feature argued in the first sentence of the last paragraph on page 7 of the remarks are not part of applicant's claims, and that any argument with respect to features not recited in the claims is also not persuasive.

Drawings

8. The October 17th 2005 amendment and response has overcome the drawing objections of the July 12th 2005 office action with respect to **Figure 1**, however some drawing issues still remain with respect to **figure 9e** and **figure 3**.

9. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

A) In **figure 9e** component 70 is shown but this component is not described in the description of figure 9e. [See page 7 lines 6-9]. The applicant's arguments that component 70 is described with respect to **9a**, fail to overcome the objection noted above, because **figure 9e** is a different figure than figure **9a**, and all component numbers shown in the figures must be described in the specification with respect to the figures in which they are shown, so that there is a correspondence between what is shown and that is described.

10. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

11. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

A) Page 5 line 29 in the description of **figure 3**, refers to **matrix components M_{ij}**, however there are no **matrix components M_{ij}**, shown in **figure 3**. The applicant's arguments on page 6 of the October 17th 2005 amendment and response that **matrix**

components M_{ij}, are not intended to be shown in figure 3, because each described component must be shown in the figure. As a solution the examiner suggests that after the words "**matrix components M_{ij}**," on page 5 line 29 applicant should **insert** *(not shown in figure 3),* so that applicant's intention to not show **matrix components M_{ij}**, in figure 3 is clear to any individual reading applicant's disclosed specification, that there is no missing component in figure 3. Applicant should either amend the specification as noted, or correct the drawing of Figure 3, to include the **matrix components M_{ij}**, as necessary so that the objection noted may be resolved.

12. Should applicant elect to correct figure 3, as opposed to the specification then, corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

13. The objections to the disclosure from the July 12th 2005 office action **are rescinded** in view of applicant's October 17th 2005 amendments to the specification.

Claim Objections

14. The objection to **Claim 7** from the July 12th 2005 office action is **rescinded** in view of applicant's October 17th 2005 amendments to claim 7 which removes the stray words "**time one**" so that the claim is logical and grammatically correct.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. **Claims 1-3, 5,** and **6-10** are **finally** rejected under **35 U.S.C. 102(b)** as being anticipated by **Lee** US Patent application Publication **2002/0180439 A1** published December 5th 2002, filed March 30th 2001, with an effective US priority date of March 30th 2001. Applicant cannot rely upon the foreign priority papers of June 14th 2002 to overcome this rejection because a certified translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15. The examiner's rejections are based on applicant's December 14th 2004 filing date

17. **Claims 1-3, 5,** and **6-10** are also **finally** rejected under **35 U.S.C. 102(e)** as being anticipated by **Lee** US Patent application Publication **2002/0180439 A1** published December 5th 2002, filed March 30th 2001, with an effective US priority date of March 30th 2001.

18. **Claims 1-3, 5,** and **6-10** are also **finally** rejected under **35 U.S.C. 102(e)** as being anticipated by **Lee** US Patent **6,771,070 B2** issued August 3rd 2004, filed March 30th 2001, with an effective US priority date of March 30th 2001. Applicant note this patent corresponds to the **Lee** US Patent application Publication **2002/0180439 A1** therefore, for the sake of brevity only reference citations from the older published reference are provided, since the same teachings of the pre-grant publication are also shown, taught and found in the corresponding issued patent disclosure of **6,771,070 B2** via a change from "page and paragraph citation", to "column and line citation", without additional excessive, and redundant, citations.

19. With respect to **Claim 1**, **Lee US 2002/0180439 A1** teaches and shows "An MR system for MR imaging, including: an open main field magnet with two main field magnet poles which are arranged on opposite sides of an examination zone in order to

generate a magnetic main field;" [See **Lee US 2002/0180439 A1** Figure 11, page 3 paragraphs [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]] "a gradient coil system with a plurality of gradient coils for generating magnetic gradient fields;" [See **Lee US 2002/0180439 A1** Figure 11, page 3 paragraphs [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]] "an RF coil system for transmitting and/or receiving RF signals with two planar RF coil arrays which are situated on opposite sides of the examination zone" [See **Lee US 2002/0180439 A1** Figure 11, where the first Rf planar coil array is represented by the planar RF transmitter coils 526 shown on one side of the examination volume of figure 11. The second RF planar coil array is the RF planar strip array or (PSA) antenna taught throughout the reference [See paragraph [0045] through [0105], the abstract, figures 1a through figure 5; figures 9a, 9b and 11], which is shown on the opposite side of the examination volume of figure 11. [See also page 3 paragraphs [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]], "each RF coil array including at least two RF coils" (i.e. the planar RF strip array 100 has more than one coil, and the RF transmitter coils 526, which are plural indicate that there are at least two or more coils comprising the RF transmitter coils 26 which are shown to be planar in figure 11.) The examiner notes that both of these planar RF coil arrays "are decoupled from one another and are connected to a respective channel of a transmit/receive unit;" [See **Lee US 2002/0180439 A1** Figures 11, 9A, 9B, abstract, page 7 paragraphs [0077], [0078] [0081] through page 8 paragraph [0083]; page 6 paragraphs [0061], [0062], [0068], [0069], [0070]; page 3 paragraphs [0020], [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]]

20. **Lee US 2002/0180439 A1** also shows "a transmit/receive unit which includes a respective channel for an RF coil of the RF coil system, each RF coil being separately controllable in the transmission mode;" [See **Lee US 2002/0180439 A1** Figures 11, 9A, 9B, abstract, page 7 paragraphs [0077], [0078] [0081] through page 8 paragraph [0083]; page 6 paragraphs [0061], [0062], [0068], [0069], [0070]; page 3 paragraphs [0020], [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]] "a control unit for controlling the MR imaging;" [See **Lee US 2002/0180439 A1** Figures 11,

computer controller 506; page 3 paragraphs [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]] "and a processing unit" (i.e. MRI imager 514, as per page 10 paragraph [0102]) "for processing received MR signals." [See **Lee US 2002/0180439 A1** Figures 11, computer controller 506; page 3 paragraphs [0021], [0022], [0023]; page 9 paragraph [0097] through page 10 paragraph [0105]]

21. With respect to **Claim 2**, **Lee US 2002/0180439 A1** teaches and shows that "the two RF coil arrays are decoupled from one another." [See **Lee US 2002/0180439 A1** abstract, page 8 paragraph [0083], page 7 paragraphs [0077], [0078]; page 6 paragraphs [0061], [0062], [0068], [0069], [0070] ; page 3 paragraphs [0020], [0021]] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2** and need not be reiterated.

22. With respect to **Claim 3**, **Lee US 2002/0180439 A1** teaches and shows that "RF cables, notably of the length $\lambda/2$ or $\lambda/4$, capacitances, impedance circuits and/or transformers are provided for the decoupling of the individual RF coils of the respective RF coil array." [See **Lee US 2002/0180439 A1** page 7 paragraphs [0076], [0080]; page 6 paragraph [0061]; and page 2 paragraphs [0014], [0017]] The same reasons for rejection, that apply to **claim 1** also apply to **claim 3** and need not be reiterated.

23. With respect to **Claim 5**, **Lee US 2002/0180439 A1** teaches and shows that "the RF coils are formed by surface antennas, notably rectangular surface antennas." [See **Lee US 2002/0180439 A1** figures 1A through figure 5 and figures 9A, 9B which show rectangular planar strips, in combination with the teachings of the abstract and page 2 paragraph [0013] through page 10 paragraph [0105] especially page 6 paragraph [0060], where resonant planar strip conductors, that are shown to be rectangular in the figures are taught throughout the reference.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 5** and need not be reiterated.

24. With respect to **Amended Claim 7**, **Lee US 2002/0180439 A1** teaches and shows that "the RF coils of each [~~time one~~] RF coil array are arranged on a single board or on two boards", [See **Lee US 2002/0180439 A1** figures 1A through 11; page 4 paragraph [0045] through page 10 paragraph [0105] "the means for the decoupling of the individual RF coils then being integrated" [See figures 11, 9A, 9B. page 2 paragraph

[0012]. Page 3 paragraphs [0020], [0021]. [0022], [0023]; page 8 paragraph [0083]; page 9 paragraph [0097] through page 10 paragraph [0105]] The same reasons for rejection, that apply to **claim 1** also apply to **claim 7** and need not be reiterated.

25. With respect to **Claim 8**, **Lee US 2002/0180439 A1** teaches and shows that "the control unit is arranged to control the MR system so as to carry out MR imaging in conformity with the SENSE method" [See **Lee US 2002/0180439 A1**, page 1 paragraph [0001], page 2 paragraphs [0009] through [0012], page 6 paragraph [0063] through page 10 paragraph [0105]] "for active RF control, for local pre-saturation, for parallel transmission and reception of signals and/or for feedback control of the RF homogeneity". [See **Lee US 2002/0180439 A1**, page 1 paragraph [0001], page 2 paragraphs [0009] through [0012], page 6 paragraph [0063] through page 10 paragraph [0105]; page 2paragraph [0013] through page 3 paragraph [0023]]. The same reasons for rejection, that apply to **claim 1** also apply to **claim 8** and need not be reiterated.

26. With respect to **Claim 9**, **Lee US 2002/0180439 A1** teaches and shows that "the transmit/receive unit comprises n transmit channels" [See **Lee US 2002/0180439 A1**, figures 9A, 9B; page 3 paragraph [0021], page 7 paragraph [0081]; page 8 paragraphs [0082], [0083]] "which can be controlled independently of one another for the control of amplitude, phase and shape of the excitation pulses". [See **Lee US 2002/0180439 A1**, figures 9A, 9B; page 3 paragraphs [0018] through [0023], page 7 paragraph [0081]; page 8 paragraphs [0082], [0083]; page 9 paragraph [0097] through page 10 paragraph [0105]] The same reasons for rejection, that apply to **claim 1** also apply to **claim 9** and need not be reiterated.

27. With respect to **Claim 10**, **Lee US 2002/0180439 A1** teaches and shows "A planar RF coil array for an RF coil system of an MR system which is to be arranged on opposite sides of the examination zone" [See **Lee US 2002/0180439 A1** figure 11, abstract and the **rejection of claim 1** above] which "is intended for transmitting and/or receiving RF signals by means of at least two RF coils which are decoupled from one another" [See **Lee US 2002/0180439 A1**, page 2 paragraph [0012] through page 10 paragraph [0105] "each RF coil being connectable to a respective channel of a transmit/receive unit of the MR system" [See **Lee US 2002/0180439 A1** Figures 11, 9A,

and 9B] "and each RF coil being separately controllable in the transmission mode". [See **Lee US 2002/0180439 A1**, page 2 paragraph [0012] through page 10 paragraph [0105] and the rejections of **claims 8** and **9** above.] The same reasons for rejection that apply to **claims 1, 8, 9,** also apply to **claim 10** and need not be reiterated.

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

29. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

30. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

31. **Claims 4** and **6** are **finally** rejected under **35 U.S.C. 103(a)** as being unpatentable over **Lee** US Patent application Publication **2002/0180439 A1** published December 5th 2002, filed March 30th 2001, with an effective US priority date of March 30th 2001; as applied to **claims 1-3. 5.** and **7-10** above, and further in view of **Molyneaux et al.,** US patent 5,578,925 issued Nov. 26th 1996.

32. **Claims 4** and **6** are also **finally** rejected under **35 U.S.C. 103(a)** as being unpatentable over **Lee** US Patent **6,771,070 B2** issued August 3rd 2004, filed March 30th 2001, with an effective US priority date of March 30th 2001; as applied to **claims 1-3. 5.** and **7-10** above, and further in view of **Molyneaux et al.,** US patent 5,578,925 issued Nov. 26th 1996.

33. With respect to **Claim 4**, **Lee US 2002/0180439 A1** teaches and shows that "the RF coils" [See figure 11, components 526, and 100] are formed by planar resonant conductors" [See **Lee US 2002/0180439 A1** figures 1A through figure 5 and figures 9A, 9B in combination with the teachings of the abstract and page 2 paragraph [0013] through page 10 paragraph [0105] where resonant planar strip conductors are taught throughout the reference.] **Lee US 2002/0180439 A1** and **Lee** US Patent **6,771,070 B2** both lack directly teaching that "the RF coil arrays include a plurality of mutually perpendicularly arranged strips." However figures 1B, 1C, 2A, 2B, 2C, 3A, 3B, 3C; with figures 2A and 3A being the most notable, do suggest via components 162a and 162b; or 160a, 160b, that "the R.F coil arrays include a plurality of mutually perpendicularly arranged strips" because **Lee US 2002/0180439 A1** teaches and shows that components 162a and 162b; or 160a, 160b, are arranged to be perpendicular to each of the conductive strips 140 in each of the RF coil arrays component 526 of figure 11. [See **Lee US 2002/0180439 A1** page 3 paragraph [0018] page 5 paragraph [0056]].

34. Additionally, **Molyneaux et al.,** teaches and shows that "the RF coils are formed by planar resonant conductors" [See **Molyneaux et al.,** Figures 1-14; col. 2 line 28 through col. 7 line 10] wherein "the RF coil arrays include a plurality of mutually perpendicularly arranged strips." [See **Molyneaux et al.,** Figures 1-14; col. 2 line 28 through col. 7 line 10; especially col. 2 line 67 through col. 3 line 5; col. 5 line 8 through col. 7 line 10.]

35. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Lee** with the teaching of **Molyneaux et al.**, because the **Lee** reference(s), show guide strips, connected to the conductors which are perpendicular to the strip conductors and prevent unwanted coupling by keeping each conductor isolated, and **Molyneaux et al.**, has perpendicular components

in his flat coil array for the same purpose. The same reasons for rejection, that apply to **claim 1** also apply to **claim 4** and need not be reiterated.

36. With respect to **Claim 6**, **Lee US 2002/0180439 A1** and **Lee** US Patent **6,771,070 B2** both lack directly teaching that "the RF coils are formed by butterfly coils", However. **Lee US 2002/0180439 A1** teaches on pages 5-6 of paragraph [0060] that the EMF guard component 160 of each of the RF coil arrays can form any of a number of geometric shapes for the parallel spatial encoded antenna (PSA) of the invention including but not constrained to "U" and "L shaped members which are space from and extend about the periphery of the array of conductive strips, with gaps between sections, or joined together on the surface of the substrate. Therefore, It would have been obvious to one of ordinary skill in the art at the time that the invention was made that even though a butterfly coil configuration is not explicitly stated, that since a butterfly configuration is geometrical, and can be formed by combining "rectangular", "U", and "L", shaped components. That a butterfly configuration is suggested and/or implied to be within the scope of the **Lee** reference(s).

37. Additionally, **Molyneaux et al.**, teaches that the planar RF coil arrays on either side of an open MRI system where "the RF coils are formed by butterfly coils". [See **Molyneaux et al.**, figure 13 col. 6 line 64 through col. 7 line 10] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Lee** with the teaching of **Molyneaux et al.**, because the **Lee** reference(s), each teach that other geometrical forms are possible, and it would have been desirable to also have the RF coil arrays available in other geometrical forms which are not completely planar, as evidenced by the fact that in the **Lee** reference(s) the guarding components can extend out from the plane of the strip conductor array, when it is desirable to image a portion of the human body which is not entirely flat, so that the coil configuration better follows the anatomy of the individual anatomy being imaged. The same reasons for rejection, that apply to **claim 1** also apply to **claim 6** and need not be reiterated.

38. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

A) **Srinivasan** US patent 6,150,816 issued November 21st 2000.

39. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

40. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

42. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

TAF
December 31, 2005

Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800